

Drug Overdose, Treatment, and Prevention Data Trends Dutchess County, 2010-2016

The Dutchess County Substance Abuse Workgroup outlined strategies to address the growing prevalence of prescription drug and heroin use in the county including the development of a data monitoring system. The Dutchess County Department of Behavioral and Community Health’s Epidemiology and Biostatistics unit compile and monitor indicators reflecting the scale of local substance use-related health outcomes.

The following report includes county-level data on overdose deaths; emergency department visits and hospitalizations for non-fatal overdose; substance use treatment utilization data; trends in youth substance use; substance use during pregnancy and fetal withdrawal syndrome; Narcan training and Narcan Kit distribution through the County’s Overdose Prevention Program; and reported overdose reversals performed by first responders. The report also describes a system for real-time overdose surveillance based on EMS 911 Dispatch data. Additional details on data sources and indicator definitions can be found in the Appendix at the end of the data report.

Note that indicator definitions and source data have changed. Emergency department visit and hospitalization rates for overdose are drawn from New York’s Statewide Planning and Research Cooperative System (SPARCS). In October 2015, SPARCS switched from an ICD 9 to an ICD 10 coding system, which resulted in changes to available codes substance types causing overdose and overdose intent. Interpretation of trends overtime and comparison to prior reports should therefore be made with caution. See Appendix to Data Report for additional information.

	Data Source	Reporting Period	Page #
Fatal Overdose	Dutchess County Medical Examiner	2010-2016	
	NYS Vital Statistics	2010-2014	2
Non-Fatal Overdose	NYSDOH, Statewide Planning and Research Cooperative System (SPARCS) Inpatient and Outpatient Data	2010-2015	6
Substance Use Treatment	NYS OASAS, Client Data System	2010-2015	9
Opioid Use in Pregnancy/ Fetal Withdrawal Syndrome	NYSDOH, Statewide Planning and Research Cooperative System Inpatient Data	2008-2015	11
Overdose Prevention	DBCH Overdose Prevention Program Data NYSDOH County Opioid Quarterly Reports, naloxone (Narcan) administrations	2015-2016	12
Overdose Surveillance	Dutchess County EMS Dispatch Data		13

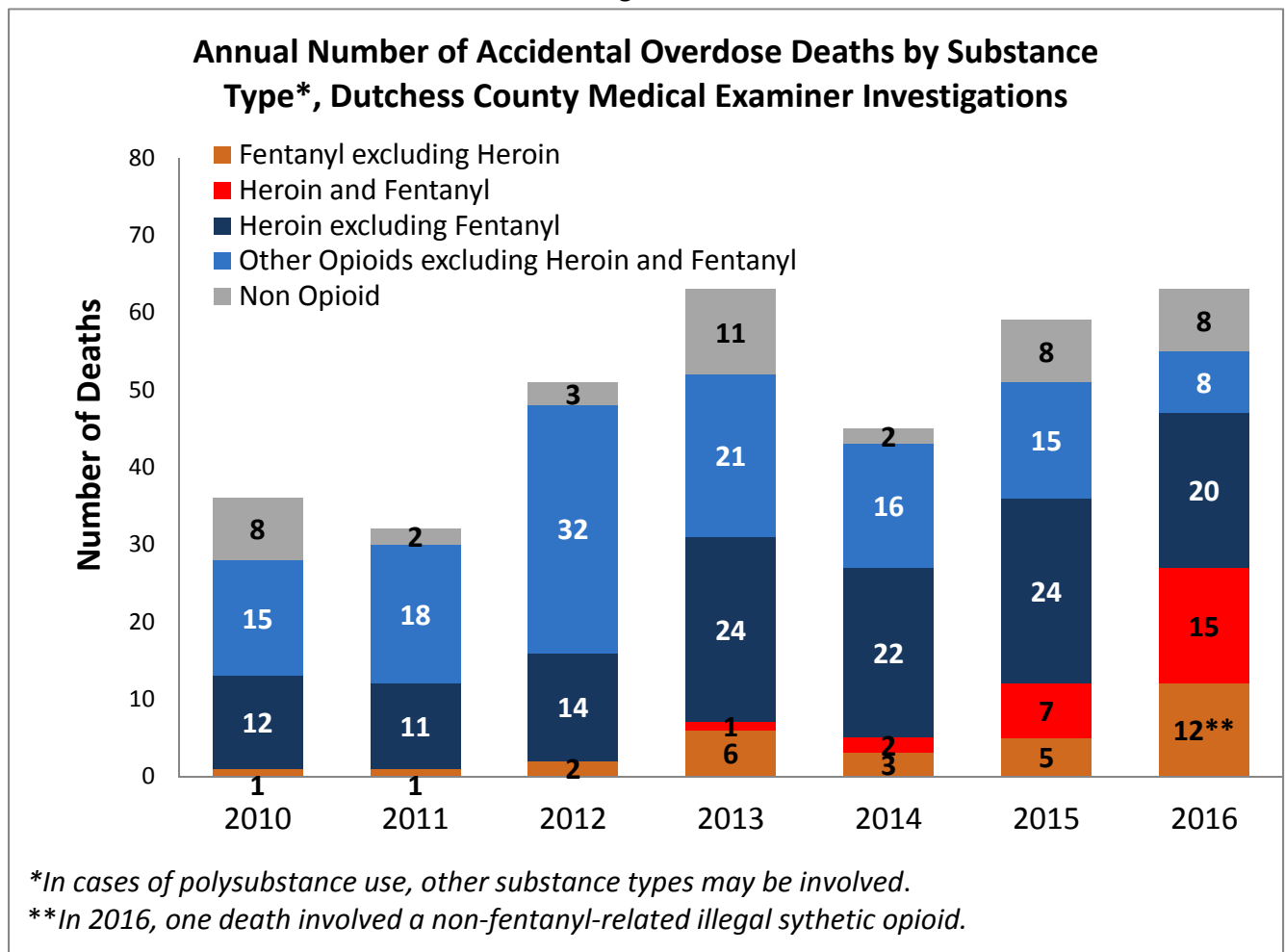
Fatal Overdoses

Fatal Overdose by Substance Type

Drug overdose rates continue to rise throughout New York State, particularly for overdoses involving heroin and other synthetic opioids. Over the last decade, the total number of overdoses in Dutchess County more than doubled from 24 deaths in 2005 to 63 deaths in 2016, with a 192% increase in overdoses involving heroin since 2010. Moreover, Dutchess County experienced the highest rate of fatal heroin overdose in New York State from 2009-2013 (5.5 per 100,000 population)¹.

More recently, the introduction of illicitly manufactured fentanyl has contributed to an unprecedented number of preventable deaths. Fentanyl is a synthetic, short-acting opioid analgesic 50 to 100 times more potent than morphine. Increasingly, fentanyl-related overdoses have been linked to illegally manufactured fentanyl and fentanyl analogues. In 2016 43% of accidental overdose deaths in Dutchess County involved fentanyl compared with just 3% in 2010 (Figure 1).

Figure 1

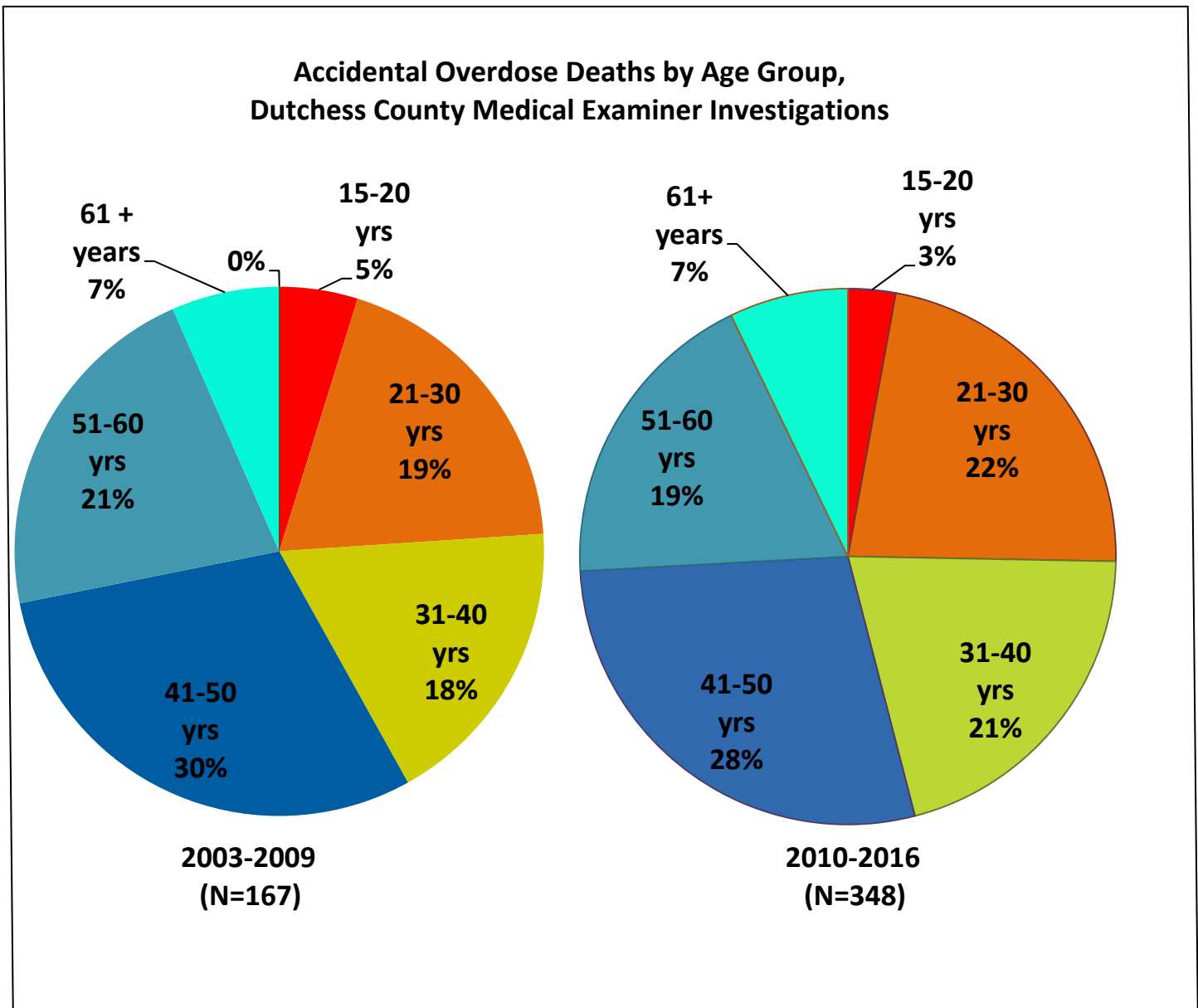


¹ New York State Department of Health, AIDS Institute. (n.d.). *Opioid Poisoning, Overdose and Prevention. 2015 Report to the Governor and NYS Legislature*. Retrieved from http://www.health.ny.gov/diseases/aids/general/opioid_overdose_prevention/docs/annual_report2015.pdf

Fatal Overdose by Age Group

Between 2003-2009 and 2010-2016, the total number of accidental overdoses more than doubled from 167 to 348 deaths in Dutchess County. Despite shifting trends in the substance involved in overdose deaths, the proportion of fatal overdoses by age group was similar between the two periods. Approximately one third of overdose decedents were between 41-50 years of age, one fifth was between 51-60 years of age, another fifth between 31-40 years and one fifth was between 21-30 years of age. Fewer decedents were over 60 or under 21 years old (Figure 2).

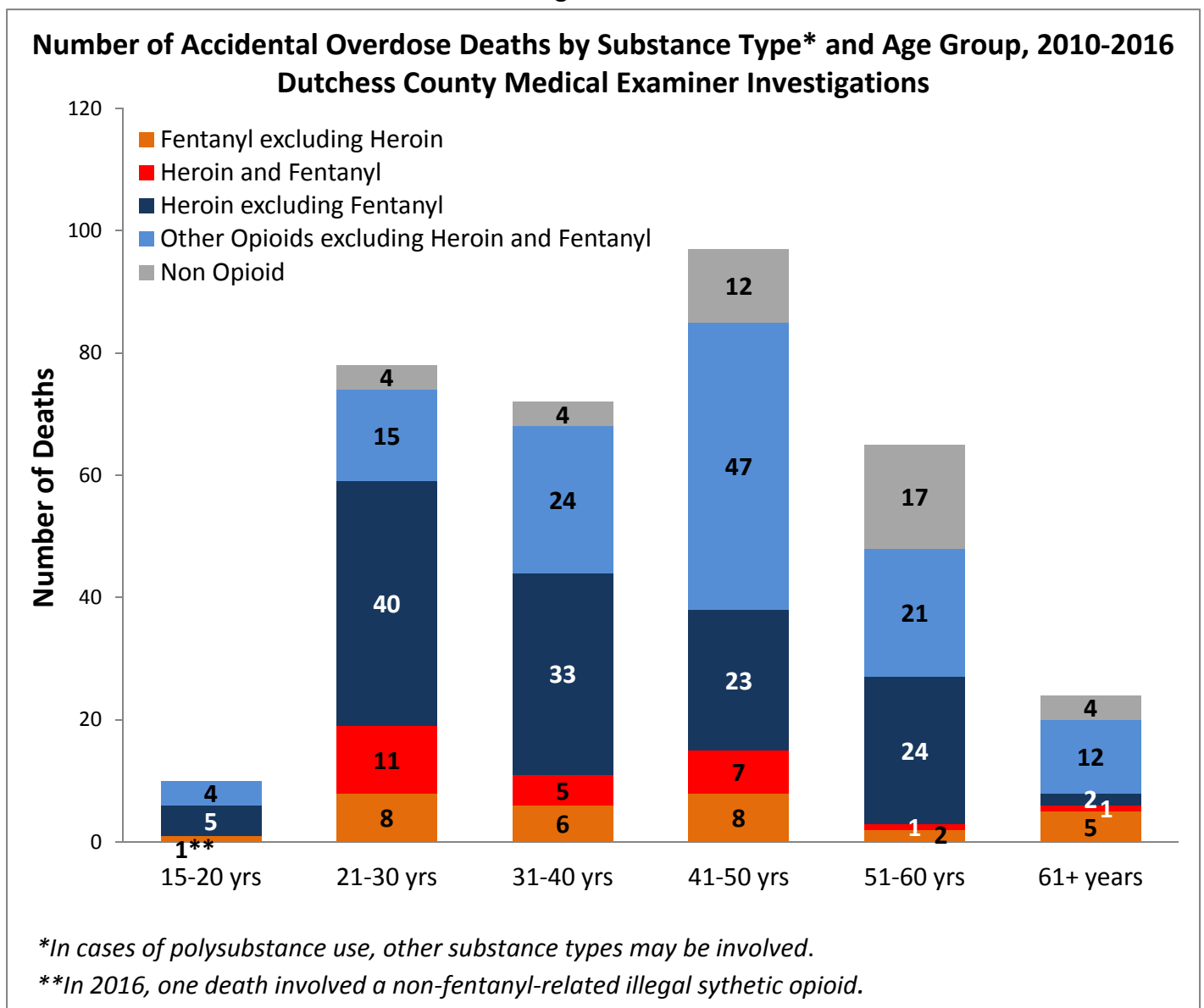
Figure 2



Fatal Overdose by Age Group and Substance Type

Still, younger decedents were more likely to overdose using heroin or fentanyl, whereas older decedents more often overdosed using prescription opioids or non-opioid drugs and medications. Thirty-nine percent of deaths among those over age 40 involved fentanyl, heroin or a combination of the two drugs. By comparison, 68% of deaths in those age 40 and younger involved fentanyl, heroin or a combination of the two. Among those 30 and younger, 74% of deaths were attributable to fentanyl, heroin or a combination of heroin and fentanyl (Figure 3).

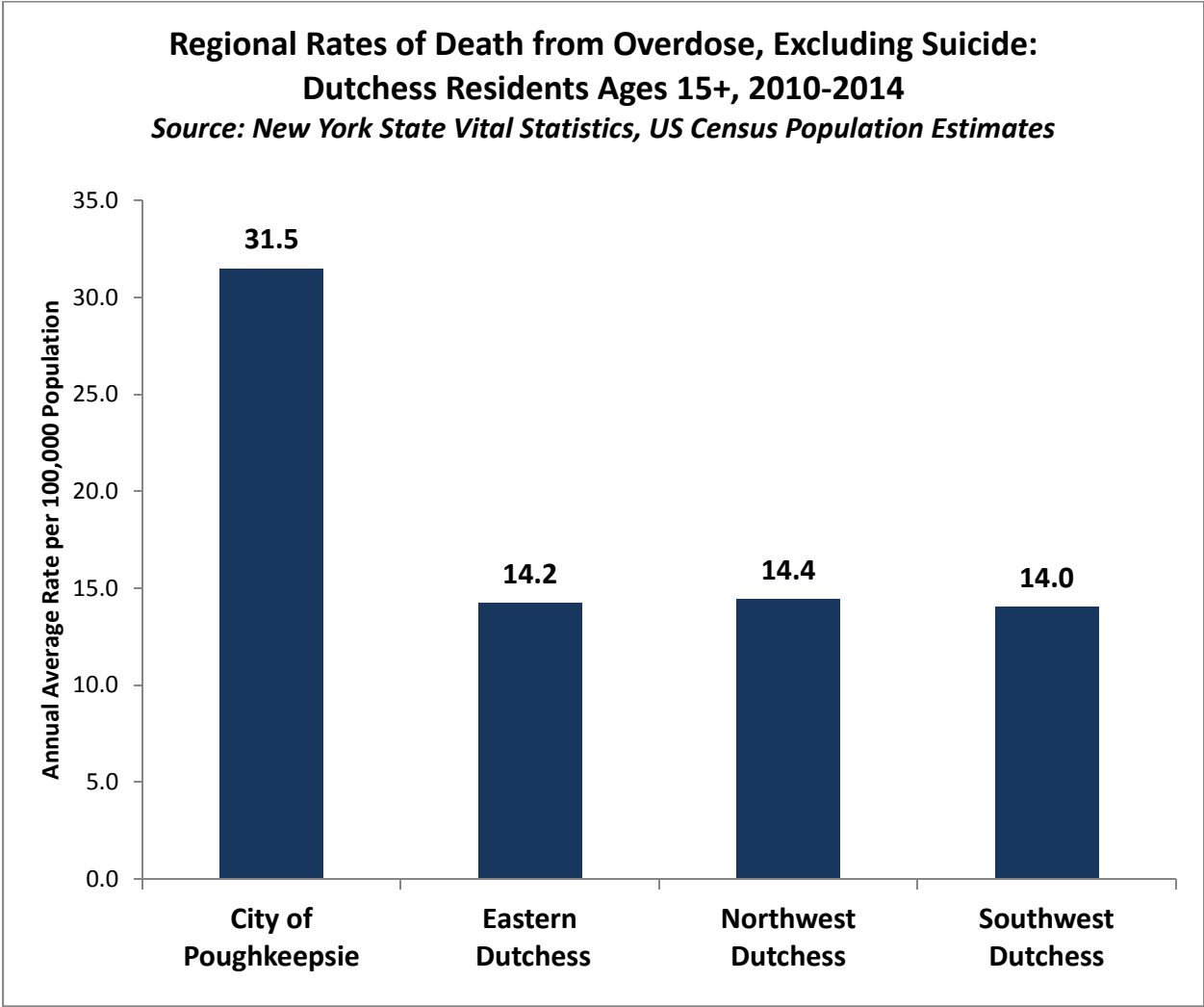
Figure 3



Fatal Overdose by Decedent Residence

Overdose deaths investigated by the County Medical Examiner (Figures 1-3) may include deaths of non-county residents that occurred in Dutchess County. Rates of overdose deaths specifically among Dutchess County residents were therefore calculated using death certificate data from Vital Statistics, including residents who died in other counties or states. The rate of unintentional overdose death was approximately twice as high among City of Poughkeepsie residents compared with the rest of Dutchess County (Figure 4).

Figure 4



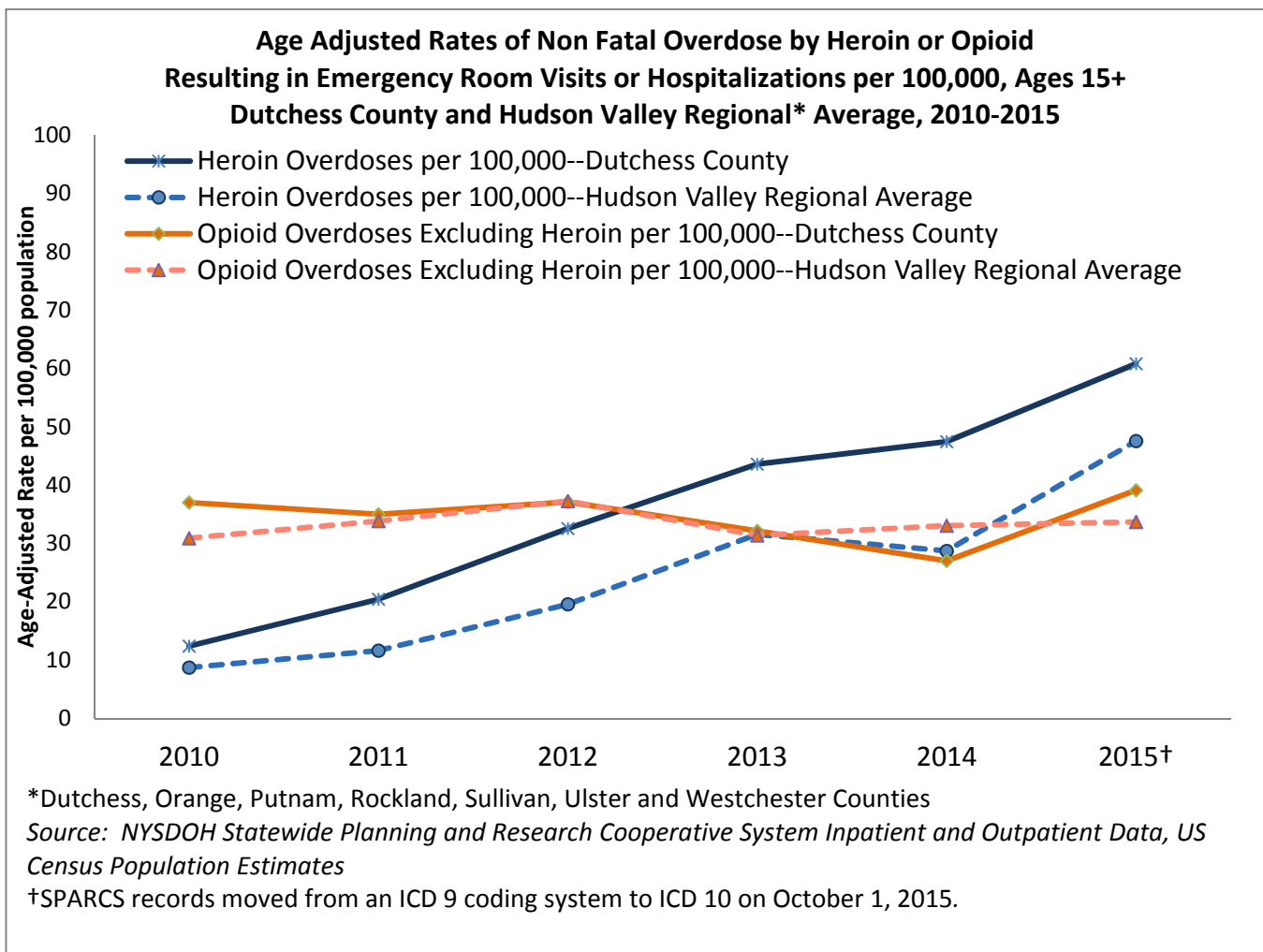
Non-fatal Overdose

Non-Fatal Heroin and Opioid Overdose, Dutchess County and Hudson Valley Region

Figure 5 compares unintentional, non-fatal overdoses among Dutchess County residents with the Hudson Valley Region overall. Among Dutchess residents, the rate of non-fatal overdose to heroin increased 310% between 2010 and 2015. For Hudson Valley residents, the rate increased 445% between 2010 and 2015. Still, among Dutchess residents, annual rates of emergency department visits and hospitalizations for non-fatal overdoses from heroin were consistently higher than the regional average from 2010-2015.

Meanwhile, rates of non-fatal overdose from opioids other than heroin were similar between Dutchess County residents and the Hudson Valley residents overall. Unlike heroin, non-fatal overdoses from other opioids increased only slightly between 2010 and 2015, up 6% among Dutchess residents and 9% for Hudson Valley residents overall.

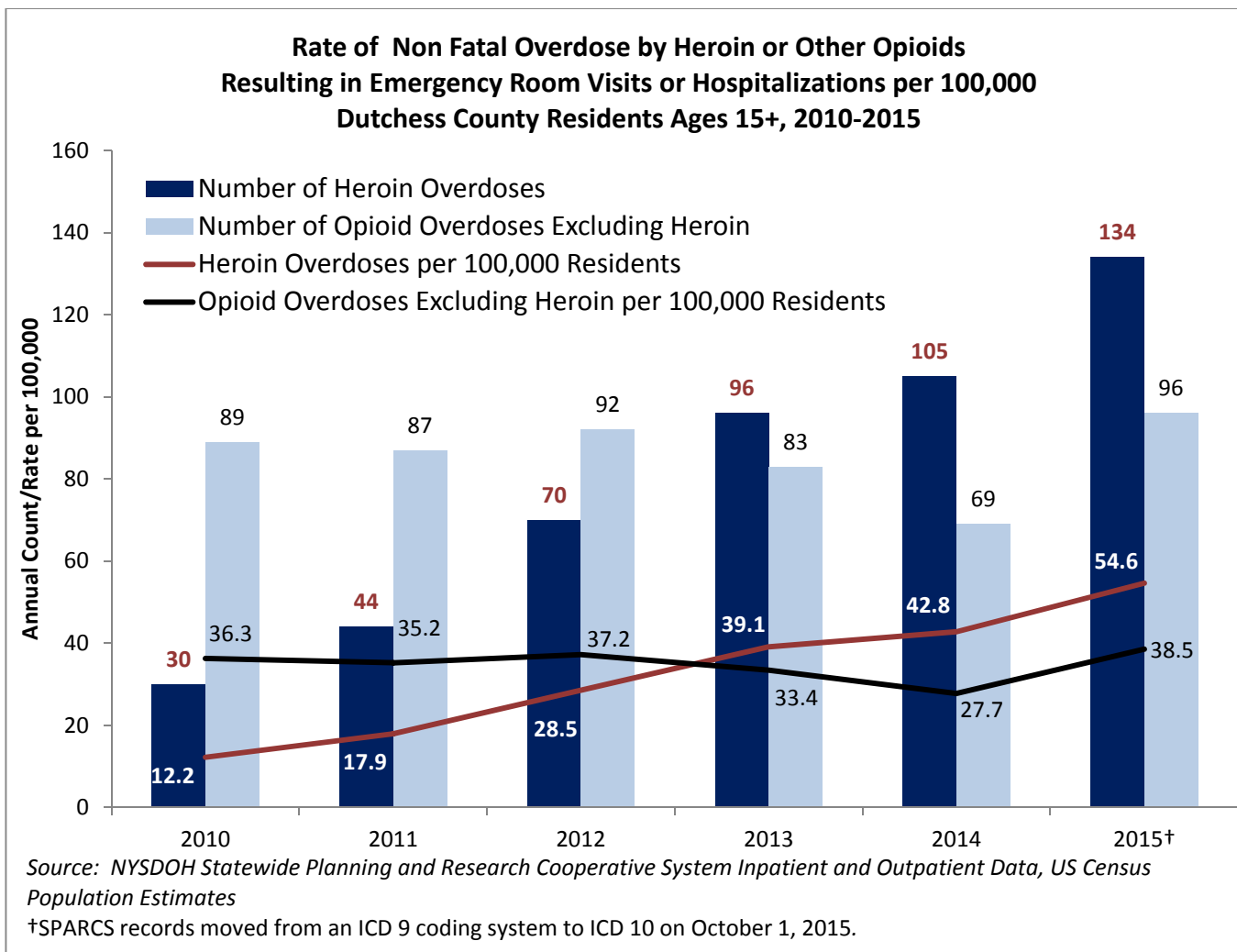
Figure 5



Non Fatal Heroin and Opioid Overdose, Dutchess County

Between 2010 and 2015 there were 995 emergency room visits and hospitalizations among Dutchess County residents due to non-fatal overdose from heroin or other opioids. On an annual basis, the rate of heroin overdose has more than quadrupled from 12.2 overdoses per 100,000 in 2010 to 54.6 overdoses per 100,000 in 2015. The rate of overdose from other opioids had decreased slightly from 36.3 overdoses per 100,000 in 2010 to 27.7 overdoses per 100,000 in 2014, rising again in 2015 to 38.5 per 100,000 (Figure 6).

Figure 6



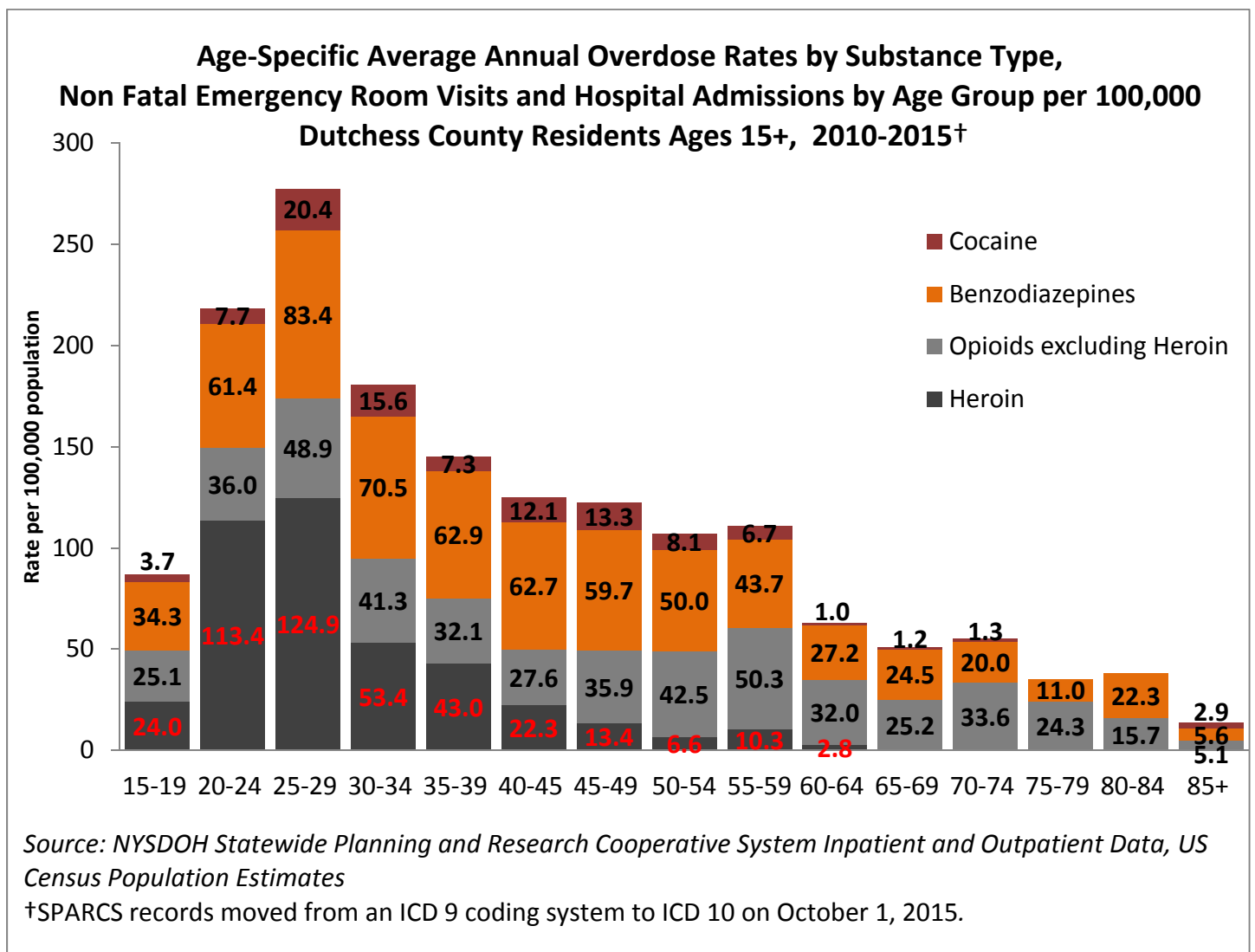
Note: overdose involving fentanyl may be under-reported in hospital and emergency department data. In October 2015, with the switch to an ICD 10 coding system, a new code for 'synthetic narcotic' became available and overdoses involving fentanyl may be captured using this code. Prior to October 2015, fentanyl overdose may have been coded as another opioid type.

Non Fatal Overdose by Age Group and Substance Type

Non-fatal heroin overdoses resulting in emergency department visits and hospital admissions were most common among individuals aged 25-29 years, followed by those 20-24 years of age. Prescription opioid overdoses were also prevalent within these age groups, however a second peak age in prescription opioid overdoses was observed for those between 50-59 years of age.

Figure 7 also includes rates of cocaine and benzodiazepine overdose. Rates of overdose involving cocaine were much lower than other substance types and varied less by age. Benzodiazepine overdose was more common and most frequently occurred for those age 25-29 years.

Figure 7



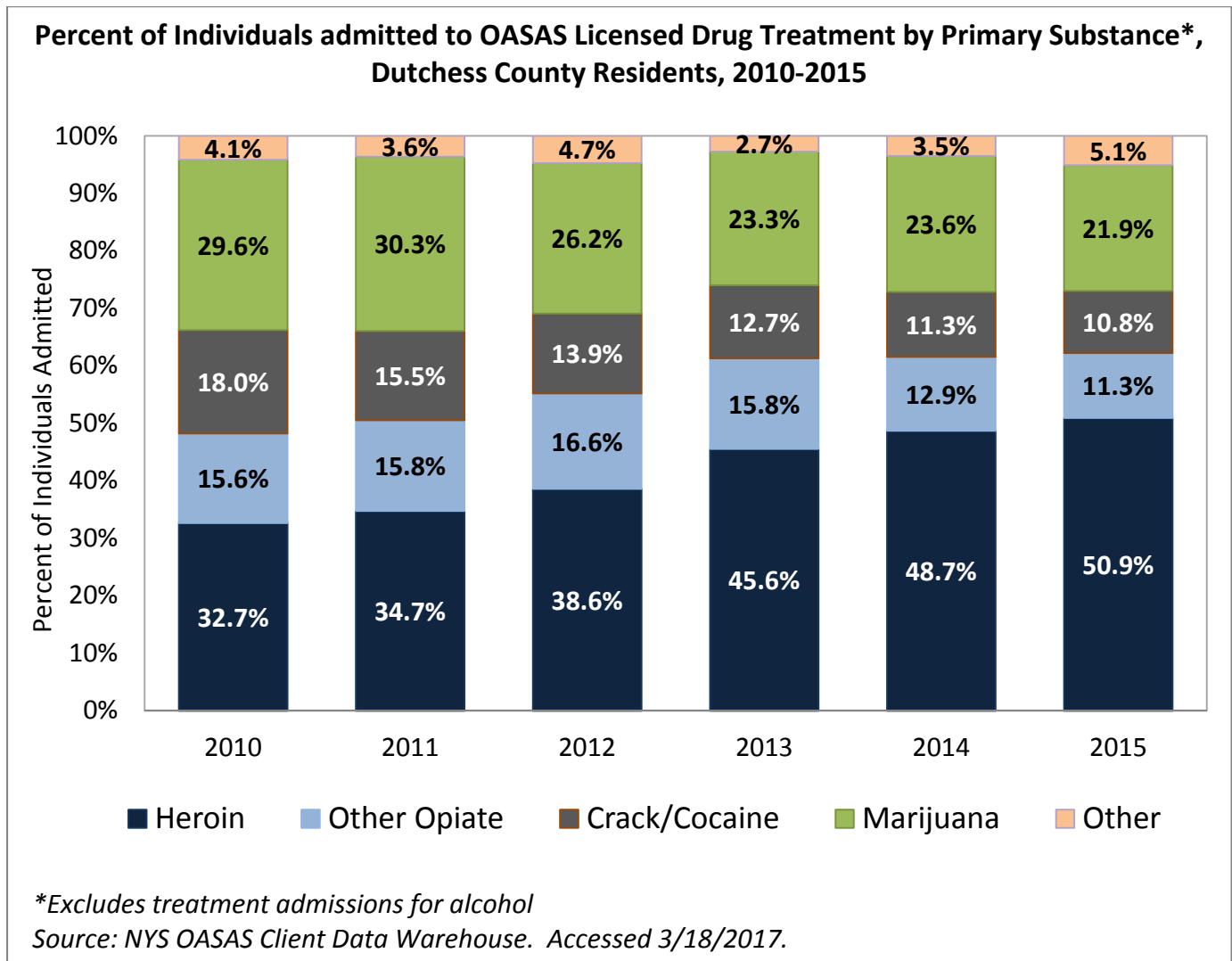
Note: Overdose resulting from mixed substance is under-reported in hospital and emergency department data where overdose events are more commonly attributed to a single substance or to may be coded as poisoning by 'other psychoactive substance' (Vassar Brothers Medical Center, Coding Quality, January 6, 2017).

Substance Use Disorder Treatment

Treatment admissions by Primary Substance

Between 2010 and 2015 the average annual number of Dutchess residents admitted to OASAS licensed treatment programs, excluding alcohol treatment, was 1,697. During the six year period, the number of admissions specifically attributed to heroin dependence increased by 98% (Figure 8). Meanwhile, the number of individuals admitted for treatment of other substance use disorders decreased. The number of individuals admitted for treatment of opioid dependence excluding heroin decreased by 8% between 2010 and 2015. Treatment admissions for marijuana decreased by 6% and admissions for crack/cocaine were down 24%. While total numbers are small, treatment admissions for ‘other’ substance types, which may include drugs such as bath salts or synthetic marijuana, increased 55% between 2010 and 2015.

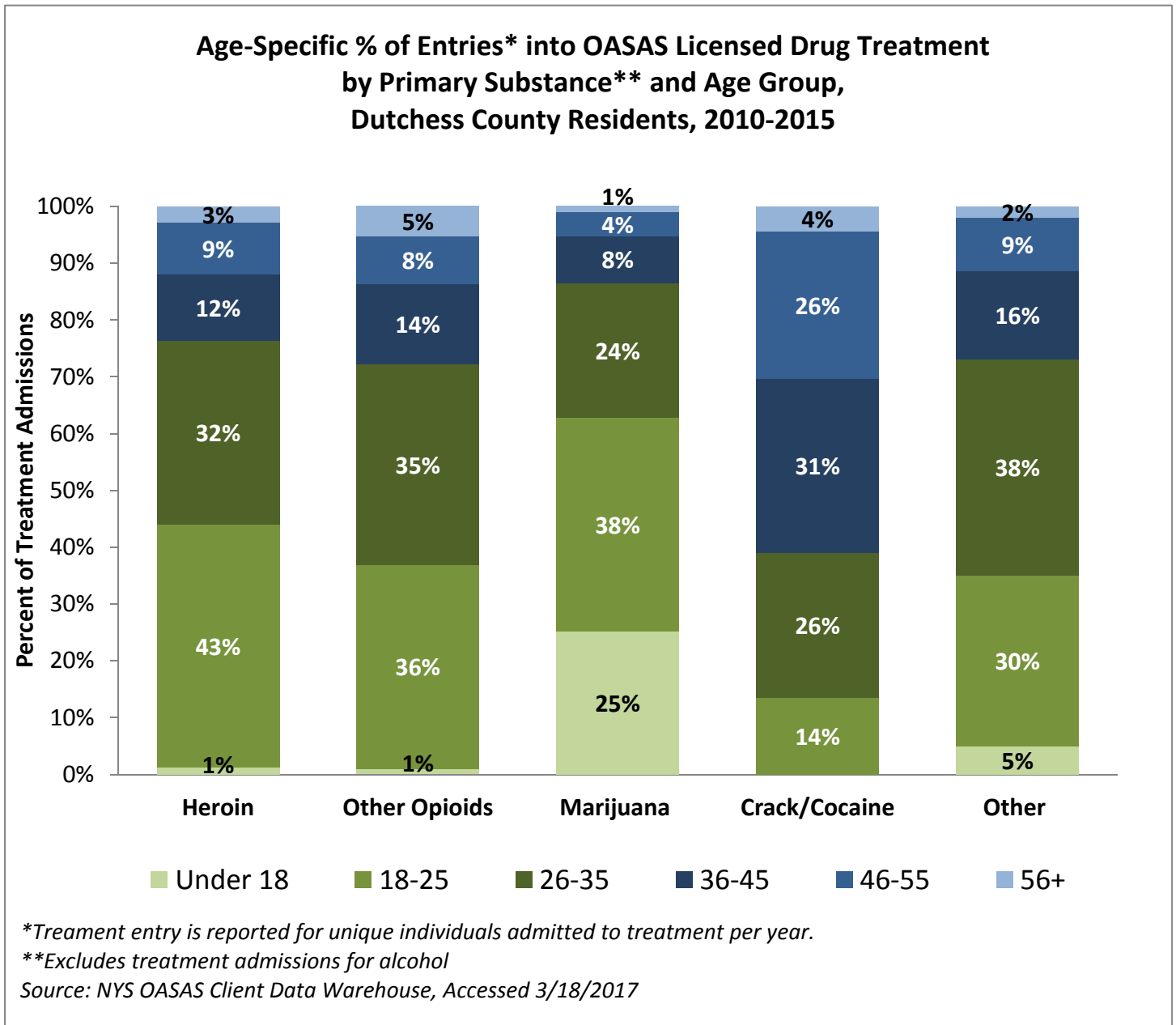
Figure 8



Treatment admissions by Primary Substance and Age Group

Figure 9 highlights the proportion of admissions per substance type by age group. Overall, 73% of individuals admitted for treatment of any substance use disorder were under 36 years of age. Aside from treatment admissions for crack/cocaine, for which 61% of individuals admitted for treatment were over 35 years of age, treatment for other substance use disorders was more common for younger residents. 76% of individuals treated for heroin and 72% treated for other opioids were under 36; 87% of individuals treated for marijuana were under 36 and 73% of individuals treated for 'other' drug types were less than 36 years old.

Figure 9

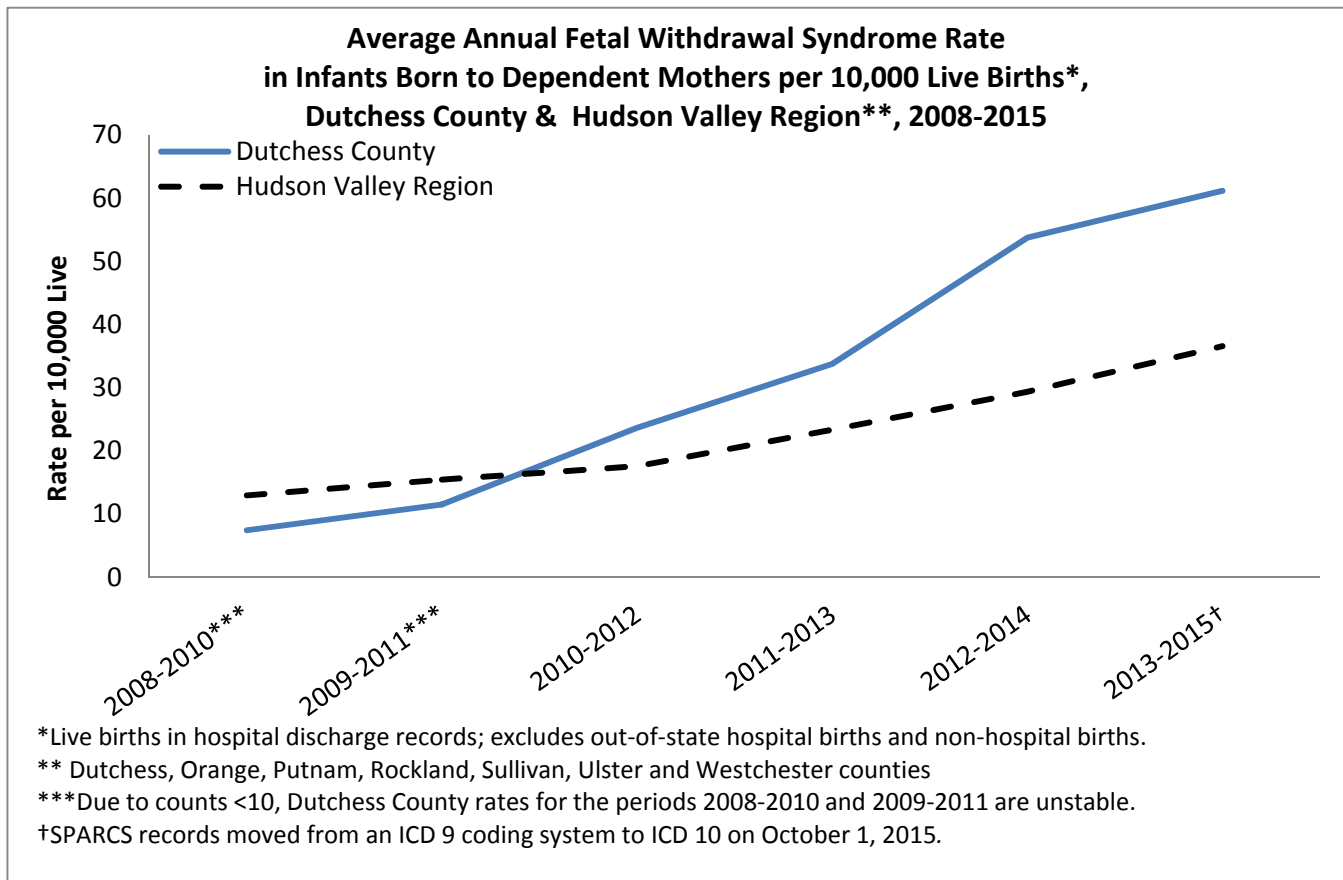


Opioid Use in Pregnancy and Fetal Withdrawal Syndrome

Fetal withdrawal syndrome occurs amongst infants exposed to licit and illicit substances taken by dependent mothers during pregnancy. Fetal withdrawal syndrome is associated with increased rates of prematurity, respiratory disease and seizures, and affected infants often require prolonged hospitalization at birth.² While the number of infants born with fetal withdrawal syndrome in Dutchess County is small, rates are rising.

A total of 67 Dutchess County infants were born affected by fetal withdrawal syndrome between 2008 and 2015, according to hospital discharge diagnoses. Between 2008 and 2010, the annual rate of fetal withdrawal syndrome per 10,000 live-born Dutchess County infants was similar or less than the Hudson Valley regional average. Since that time, the rate of fetal withdrawal syndrome amongst Dutchess County infants has increased. In 2014 the rate of fetal withdrawal syndrome in Dutchess County infants was more than double the regional average. Regionally, the incidence of fetal withdrawal syndrome has also increased. The rate per 10,000 live births in 2015 was nearly 4 times greater than in 2008 (Figure 10).

Figure 12



² Hayes, M and Brown, M. 2012. Epidemic of Opiate Abuse and Neonatal Abstinence. JAMA. 307(18): 1974-1975.

Overdose Prevention – Naloxone Activities

Dutchess County Department of Behavioral & Community Health’s Overdose Prevention Program

The Dutchess County Department of Behavioral & Community Health has operated an Overdose Prevention Program since June 2014 that is certified by the New York State Department of Health. Through the program, the Department coordinates training and provision of overdose prevention kits to county law enforcement programs and community members. Total numbers trained and kits distributed for 2015 and 2016 are presented in Table 2.

Table 2

Dutchess County Department of Behavioral & Community Health Overdose Prevention Program	2015	2016	Total
Number of Law Enforcement Officers Trained	145	60	205
Number of Community Members Trained	419	1230	1649
Number of Narcan Kits Distributed	489	2268	2757

Naloxone (Narcan) Use by First Responders

A growing number of first responders including emergency medical service (EMS), fire department and law enforcement staff have been performing overdose reversals using naloxone (Narcan). The New York State Department of Health aggregates all reported administrations of naloxone reported by county. Although not all naloxone administrations are captured by the NYSDOH, reported numbers of overdose reversals have increased.

Table 3 presents the total number of Dutchess County based EMS and law enforcement naloxone administrations to for 2015 and 2016. It is important to note that these figures do not include all administrations of naloxone, as some reversals are unreported.

Table 3

Dutchess County Naloxone Administration Reports	2015	2016
Naloxone Administration by EMS ¹	272	359
Naloxone Administration by Law Enforcement ²	46	59

¹Includes EMS naloxone administrations reported electronically. The actual number of administrations may be higher.

²Includes law enforcement naloxone administrations reported to the NYSDOH AIDS Institute. The actual number of administrations may be higher.

Source: NYSDOH County Opioid Quarterly Reports, April 2017 (data as of February 2017).

Real Time (“Syndromic”) Surveillance –

EMS Dispatches and Emergency Department Visits for Suspected Overdose

Real-time drug overdose surveillance is a tool that allows for more timely knowledge of overdose trends on an ongoing basis, and detection of unusual overdose cluster events that may be associated with a contaminated or highly lethal batch of heroin, fentanyl or other emergent, synthetic substances. It stands to complement ongoing primary prevention efforts with a secondary, acute response during suspected cluster events.

DBCH has developed a surveillance system using Dutchess 911 ambulance dispatch data, which are available in real time, flagging records for mention of overdose and/or heroin at the time of dispatch. While the case definition does not capture all overdoses, such as when the person was unconscious at the time of dispatch and drug use was unknown, the approach is similar to other early warning surveillance systems used in New York State and nationally that rely on chief complaint rather than diagnosis.

The Department is also monitoring a second system, hosted by the New York State Department of Health, based on Emergency Department chief complaint data. This system is in near-real time with a 24-48 hour lag. Like dispatch data, records with mention of “overdose” and/or “heroin” or “fentanyl” are flagged and included in daily counts.

Both of these systems, known as “syndromic surveillance,” allow for timely data analytics to potentially trigger an alert of an emergent overdose-related threat before other sources of data become available. It adds to the ongoing monitoring of confirmed overdose deaths investigated by the Dutchess County Medical Examiner, which are available as toxicology results are complete, in addition to other semi-annual and annual surveillance updates including nonfatal hospital admissions and emergency department visits for overdose, reported naloxone use by first responders, and substance use disorder treatment data.

**Appendix to Data Report:
Measure Definitions and Data Notes by Source**

Data Source	Measure Definition	Notes
US Census Bureau	U.S. Census Bureau’s Annual County Population Estimates were used to obtain denominators for all rate calculations.	
Dutchess County Medical Examiner (DCME)	Deaths investigated by the Dutchess County Medical Examiner where the cause of death was determined to be drug-related substance abuse, excluding suicide or undetermined intent.	Investigations/decedents include non-county residents who died in Dutchess County. By the same token, Dutchess residents deaths that occur out-of-county are not reported to the DCME.
Vital Statistics / Death Certificates	Deaths of Dutchess County residents where the underlying cause of death listed on the death certificate was accidental drug poisoning (ICD-10 codes X40-X44) or drug poisoning of undetermined intent (ICD-10 codes Y10-Y14).	Includes Dutchess County residents regardless of the place of death, whether in-county or elsewhere. Only the underlying cause of death is currently provided by the Office of Vital Statistics in annual data sets shared with Dutchess County; measure does not include deaths where drug poisoning was listed as a contributing cause of death.
New York Statewide Planning and Research Cooperative System (SPARCS)- Hospitalizations and Emergency Room Visits	<i>All events are based on patient county of residence. ED visits and hospitalizations occurring anywhere in New York State are included.</i> <i>Non-fatal Heroin Overdose –</i> Hospital admissions and emergency department visits, excluding patient dispositions of death, where any diagnosis field was listed as heroin poisoning (ICD-9-CM code 965.01/ICD-10 code T401) or contained an injury cause of unintentional heroin poisoning (ICD-9-CM codes E850.0); <i>excluding</i> records where any diagnosis or injury cause was listed as adverse effects of a drug in therapeutic use (E930-E949).	Records include hospitalizations and emergency department visits for Dutchess County/Hudson Valley residents occurring in any hospital in New York State; out-of-state events are not included. Data reflect number of admissions and visits, not the unique number of individuals seeking care due to the fact that data are de-identified. Emergency department visits are those events resulting in treatment and same-day discharge or transfer to another facility; Patients admitted from the ED as an inpatient to the same facility are

	<p><i>Non-fatal Overdose by Other Opioids -</i></p> <p>Hospital admissions and emergency department visits, excluding deaths, where any diagnosis field was listed as opioid poisoning other than heroin (ICD-9-CM codes 965.00, 965.02, 965.03, 965.04, 965.05, 965.06, 965.07, 965.08, or 965.09/ICD-10 code T400, T402, T403) or contained an injury cause of unintentional opioid poisoning other than heroin (ICD-9-CM codes E850.1-.2); <i>excluding</i> records where any diagnosis or injury cause was listed as adverse effects of a drug in therapeutic use (E930-E949).</p> <p><i>Non-fatal Overdose by Benzodiazepines -</i></p> <p>Hospital admissions and emergency department visits, excluding deaths, where any diagnosis field was listed as benzodiazepine poisoning (ICD-9-CM codes 969.4/ICD-10 code T424) or contained an injury cause of unintentional opioid poisoning other than heroin (ICD-9-CM codes E853.2); <i>excluding</i> records where any diagnosis or injury cause was listed as adverse effects of a drug in therapeutic use (E930-E949).</p> <p><i>Non-fatal Overdose by Cocaine -</i></p> <p>Hospital admissions and emergency department visits, excluding deaths, where any diagnosis field was listed as cocaine poisoning (ICD-9-CM codes 968.5, 970.81/ICD-10 code T405) or contained an injury cause of unintentional opioid poisoning other than heroin (ICD-9-CM codes E854.3, E855.2); <i>excluding</i> records where any diagnosis or injury cause was listed as adverse effects of a drug in therapeutic use (E930-E949).</p>	<p>counted as admissions, not visits.</p> <p>For comparison, data were also obtained for all residents of the Hudson Valley region including the counties of Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester.</p> <p>Each record has a primary diagnosis and 24 other diagnosis fields available, plus a cause-of-injury field; injury causes may also be listed in any diagnostic field other than the primary diagnosis.</p> <p>Overdose involving fentanyl may be under-reported. In October 2015, with the switch to an ICD 10 coding system, a new code for ‘synthetic narcotic’ became available and overdoses involving fentanyl may be captured using this code. Prior to October 2015, fentanyl overdose may have been coded as another opioid type.</p> <p>Overdose resulting from mixed substance is under-reported in hospital and emergency department data where overdose events are more commonly attributed to a single substance or to may be coded as poisoning by ‘other psychoactive substance’.</p>
<p>New York State OASAS Client Data System – Substance</p>	<p>Proportion of admissions into any OASAS-licensed drug treatment program in New York State, including inpatient, outpatient, residential, and methadone maintenance programs, among</p>	<p>Data exclude out-of-state treatment and treatment in privately operated programs that are not licensed by OASAS.</p>

Abuse Treatment	Dutchess County residents, stratified by drug type (alcohol excluded): heroin, other opioids, crack/cocaine, marijuana, or other drug.	Counts reflect total admissions/entries, not unique patients due to the fact that data are de-identified.
Hudson Valley Regional EMS Council (HVREMSCO) - Naloxone (Narcan) Use Data	Number of naloxone (Narcan) administrations within Dutchess County by first responders reported to HVREMSCO.	EMS agencies that do not submit electronic records are not captured. Currently approximately 40% of agencies in the Hudson Valley submit via paper.
Dutchess County Department of Health – Naloxone Training and Kit Data	Number of law enforcement officers or community members trained by DCDOH to administer naloxone (Narcan), and number of naloxone kits distributed	